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The Species of the New England States.

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Studies in the Genus Hydnocera Newm., (Col.).
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Introduction.

The following paper comprises the partial results of a systematic study of the insects of the genus Hydnocera Newman of the coleopterous family Cleridae and is intended as a preliminary to a complete systematic revision of the genus for the United States. The greated part of the work was done at the Massachusetts Agricultural College during the past year and is offerred as fulfillment in part of the requirements for the degree of Master of Science. During the course of the work it has been the good fortune of the writer to receive for study the entire collection of Mr. Albert B. Wolcott of the Field Museum of Natural History, Chicago, Ill.; the general collections of the Massachusetts Agricultural College, including the major part of the Cleridae from the collection of the late Mr. L. H. Joutel; Kansas Agricultural College; Kansas State University; University of Maine; Montana Agricultural Experiment Station and other smaller lots. In addition to these, the author has seen and studied the material in the Leconte and Blanchard collections at Harvard University, the material in the collection of the Boston Society of Natural History, and the New England material at the American Museum of Natural History, New York City. Whenever possible, the type itself has been studied and drawings included in the plate made from

* Contribution from the Entomological Laboratory of the Massachusetts Agricultural College, Amherst, Massachusetts.

such a source have been noted.

At this time it gives me great pleasure to record my thanks to Drs. H. T. Fernald and G. C. Crampton, both of whom have assisted me in all possible ways. To Mr. Albert B. Wolcott, I offer my thanks and gratitude, not only for the material placed at my disposal but for the countless favors in the way of literature and suggestions which he has at all times offerred most freely and generously. Thanks are also due Dr. W. S. Regan, Messrs. Nathan Banks of the Museum of Comparative Zoology, Harvard, C. W. Johnson of the Boston Society of Natural History, A. J. Mutchler of the American Museum of Natural History, New York and to all others who have so kindly placed material at my disposal.

Historical.

Subfamily Hydnocerini : The genus Hydnocera Newm. falls naturally into the fourth of the six subfamilies of the Cleridae and is itself the type genus of that subfamily, the Hydnocerini. This group of genera is separated from the rest of the family by the following characteristics, the arrangement of which is adapted from Mr. Sigmund Schenkling's work on the family in the Genera Insectorum.

Tarsi of five segments; thorax without lateral margins. . . . 1.
Tarsi of four segments; thorax with more or less distinct lateral margins. . . . . 4.
1. All tarsal segments visible from above. . . . . Tillini.
First segment covered from above by second, sometimes minute. . . . . 2.
2. Eyes entire or only minutely emarginate at base of antennae . . . . . Hydnocerini.
Eyes distinctly emarginate. . . . . 3.
3. Eyes emarginate in front, sometimes but slightly. . . Clerini.
Eyes emarginate on inside. . . . . Phyllobaenini.
4. Antennae serrate or with three large terminal segments. . . . . Enopliini.
Antennae with a small triarticulate club. . . . . Corynetini.

In 1903, Schenkling assigned the following genera to the subfamily Hydnocerini : Isolemidia Gorham, Hydnocera Newman, Ellipotoma Spinola, with possibly Theano Castelnau. In 1910, C. J. Gahan, of the British Museum, basing his work on the great collections of that institution, made one change in the above arrangement, that of relegating Ellipotoma Spinola to the Enopliini. Still later, in 1912, A. B. Wolcott took the genus Zenodosus Wolcott from the Clerini where it had been placed since about 1830 and added it the the genera of the Hydnocerini. Of the genera now considered as belonging in this group, but two are th be found in the United States, one Zenodosus, Z. sanguineus Say, widely distributed over North America is the sole member of the genus. The other genus, Hydnocera NewM., forms the subject of this paper.

Genus Hydnocera Newman : The first insect to be described, which today is included within the confines of this genus, was the species - humeralis - described by Thomas Say in the year 1823 as Clerus humeralis. Three more species were described by the same author before 1838, when Newman erected a new genus Hydnocera to include the four species of Say, humeralis, pallipennis, verticalis and unifasciata, as well as three new ones of his own making, rufipes, curtipennis and aegra. At the time, Newman published the description of a species which he designated as serrata and by page priority, this is the type of the genus. But as serrata is a synonym of pallipennis Say, the latter becomes the type. Four years later, Klug, in his attempt at a synopsis of the Cleridae of the world, refused to recognise Hydnocera and placed under the head of Clerus, species that are

now considered as belonging th no less than fifteen genera! However, in 1844, Maximilian Spinola published a masterpiece on the aame subject and reëstablished Newman's genus, adding some new species and noting that the species are solely Nor American in distribution. Five years later two interesting papers appeared, one by Mr. Adam White entitled "A Catalogue of the Coleoptera in the British Museum, Part IV, Cleridae". Here the author disregards Spinola's note and places in Hydnocera, seven forms from Australia. The second paper concerns us more as it marks the first attempt to tabulate the Cleridae of the United States, made by Dr. John L. LeConte. Fourteen species of the genus Hydnocera are here noted, of which eleven are now considered valid, although one, an actual new species was wrongly identified and placed as a previously described form. Since that time many new species have been added to the list, the greater part of them appearing in the Biologia Centrali-Americana, under the authorship of the Rev. H. S. Gorham. Other workers who have added to the list are A. B. Wolcott, H. F. Wickham, H. C. Fall, Charles Schaeffer, F. C. Van Dyke and the author. The present list of recognised forms numbers 129, of which elemen are to be found in the New England States.

External Anatomy.

Form varies from very elongate with parallel sides to quite robust with the lateral margins of the elytra decidedly attenuate toward the posterior. Size quite variable. In H. bicolor Lec. and H. pusilla Schaef., the length hardly exceeds two and one-half millimeters while in some specimens of H. longa Lec. the length may reach a maximum of seven millimeters. Vestiture. All

species are clothed with two types of pubescence to a greater or lesser degree. The pubescence of the first type is, so far as I am able to determine, universally present and consists of long, erect, sparsely distributed hairs, evenly scattered over the entire body, with the exception of the mouth-parts and tarsi. the second type, found to some extent on nearly all the species which can be considered as typical and especially in the case of such as scabra Lec. and subfasciata Lec., and consists of short, depressed, more or less scale-like hairs, usually pale or silvery in color.

Head. Exclusive of appendages, consists of a single sclerite, all cervical sutures being obliterated. Front large and flat, nearly equilateral but in some cases trapezoidal in shape. Lateral margins parallel or convergent toward labrum, sharply defined. At upper part passing imperceptibly into the vertex, which is short and broad. Both front and vertex carry, in all species, punctures. The coarseness and density of the punctures constitutes a character of use in the separation of species. Eyes usually large, quite convex, the inner margin straight, rarely convex. Surface is finely granulated with always a few long hairs arising from between the facets. The prominence of the eyes is always lateral, never in front of the face, and usually causes the head to appear wider than the elytra at the humeri. Antennae short, filiform and capitate, arising at the lower part of the anterior border of the eye (at which point the eye carries a minute emargination), composed of eleven segments. The first segment is large, cylindrical but somewhat arcuate, and is usually about the length of the terminal club. The second segment is considerably shorter than the first or third,

and is more globose in form, in some species being nearly spherical. The third segment is cylindrical, very long and thin, usually as long as the first buf much less thick. Segments four to nine are much the same in shape as the third, but each becoming shorter and broader than the preceeding. The tenth segment is very large and globose but in some species is somewhat flattened but always forming with the eleventh and last segment, a distinct club. The terminal segment is very small in most cases and the suture is usually so disguised by the fine pubescence as to be invisible. The color varies from testaceous to piceous but is never pigmented with metallic colors, as is the body in some cases. Pubescence usually fine and moderately dense. Labrum transverse, trapezoidal in form, separated from the front by a more or less distinct suture, anterior margin entire or very slightly emarginate, pubescence very sparse but evenly distributed. Mandibles slender falciform, decidedly acuminate toward tips, quite large, but when closed concealed beneath the labrum. On the inner side each bears one or more teeth near the middle, the larger tooth (when there are more than one) or the single tooth is placed slightly basal to the middle and is comparable to the retinaculum of the Carabidae. The mandibles never carry pubescence of either type. Maxillae moderately large, both lobes present. The outer lobe or lacinea is oblong oval in form, slightly broader at the distal end. The entire outer surface is covered with rather dense, moderately coarse hairs, while the margin is set with stout spiniform setae. The inner lobe or galea is more narrow but quite as long, with the lateral margins parallel and the tip rounded; the vestiture is similar to that of the lacinea but with spiniform setae only at the rounded end. Maxillary palpi com-

posed of four segments. Of these, the first and second segments are similar in form and size, short and stout, together nearly as long as the galea. Pubescence sparse, consisting of a few long hairs placed at irregular intervals. The third segment is cylindrical, somewhat longer than the second or first and in some species is slightly fusiform. Terminal segment about two-thirds as long as the preceeding, somewhat conical in form. The pubescence of the last two segments similar to that of the first. Labium small, quadrate, not separated from the mentum by a distinct suture, moderately densely clothed with long hairs. Labial palpi of three segments, arising from the lateral margins of the labium slightly behind the middle. Segments one and two long, thin and cylindrical, sparsely pubescent. Terminal segment very large, triangular and somewhat flattened. Pubescence moderately dense but short and indistinct. Ligula and paraglassae not distinct from the labium. Gula sutures short, parallel, enclosing the basal part of the mentum.

Thorax composed of three distinct regions. Prothorax of one piece, all sutures between the notum, pleurae and sternum being obliterated. In the species that are nearest like the type, the prothorax is distinctly broader than long, with a conspicuous lateral dilation slightly anterior to the middle. Anterior to this dilation there is a rather deep, transverse impression which is most conspicuous on the disk and which becomes nearly obsolete under thezside prominences. Near the base of the thorax, there is a second transverse impression somewhat similar to the first, but usually broader and more conspicuous at the sides. In the group os species of which curtipennis is typical, the thorax is much longer than broad, nearly cylindrical with very

weak lateral dilation. The anterior transverse impression is much less evident while the basal impression is quite strong. The surface of the entire thorax of the first type is covered with rather densely placed, moderately fine to coarse punctures, while those of the second type have the thorax nearly smooth with a few scattered coarse punctures. Anterior coxal cavities wide open behind, in most species nearly confluent. Mesothorax very short and inconspicuous, composed of the normal number of sclerites. Notum concealed, partially membraneous. Sternum small, transverse, truncate on the anterior margin, on the posterior margin prolonged into a short quadrate process which extends between the median coxae, thus causing them to be slightly separated. The pleurae are each divided by a longitudinal suture into two parts, the epipmeron and episternum. Both pieces are somewhat oblong in shape and in some species carry a slight amount of fine pubescence. The mesocoxal cavities are formed by the mesosternum on the inside and anterior border, and by the mesepisternum on the outside. Metathorax fully twice as long as the mesothorax, sternum large and very convex in the greater part of the species, slightly prolonged behind between the hind coxae. The sternum is rarely very pubescent although in some species of the subfasciata group such is the case. The metapleurae are divided as the mesopleurae, the episternum equal in length to the sternum but tapering posteriorly to a sharp point. Epimeron of equal length but widening posteriorly so that the inner posterior angle touches the outer posterior angle of the sternum. Taken together as the pleuron, the width is slightly less than the length and the general shape is rectangular. In many of the species, the epimeron is densely pubescent with rather short

silvery, sometimes scale-like hairs. Metacoxal cavities very transverse, bounded by the metasternum and just reaching the posterior margin of the epimeron. Wings quite large, membraneous, when not in use folded beneath the elytra. Elytra of various shapes and sizes. In the species of the unifasciata group, they completely cover the abdomen and are bent downward at the tips. The suture is closed the entire length. In the case of subfasciata and its allies, the elytra nearly reach the tip of the abdomen but do not turn down nor is the suture closed the entire length. A third type is that of pusilla where the elytra are widely dehiscent at the suture and are very short, hardly reaching the first abdominal segment. The lateral margins and apices of most of the species bear a more or less distinct serration. In two species, aegra Newm. and brunnea (an unpublished new species from Kansas) the elytra are long but absolutely truncated at the tips. This does not obtain in any other species of the genus. Abdomen of six subequal segments, more or less visible from above. The first ventral segment is slightly longer than the following segment, second through sixth equal. Pubescence sparse but evenly distributed. The terminal ventral segment is indicative of the sex of the individual. In the males, this segment is divided into two cornu or horns which serve as claspers during the process of copulation. When the segment is completely divided, the preceeding ventral is rather deeply emarginate. In other cases the final is divided for but half its length. In the female, the terminal ventral is entire and forms the lower half of a tube leading to the sexual organs. The terminal dorsal segment is hinged so that it can be drawn down to completely close the external opening.

The legs are long and thin, typically formed for an insect which is very active. Anterior coxae large, conical and prominent, middle coxae smaller and more globose while the posterior are very narrow and transverse. Other parts of the legs are similar for the three pairs. Trochanters small, oval. Femora long, fusiform, attached to the sides of the trochanters, the posterior femora often reaching the tip of the abdomen. Tibiae thin, slightly shorter than the femora. Tarsi composed of five segments. The first segment is small and is covered from above by the second which is somewhat larger. Third and fourth similar to the second and like the second carry a membraneous appendage on the under side. Last segment thin, not appendaged, usually twice as long as the fourth and bearing at its tip the tarsal claws. Claws divaricate, each carrying at the base a stout, broad appendage. Tips thin and sharp. In the species with the prothorax decidedly longer than broad, the claws do not have the basal tooth, but are slender for their entire length.

From the other genera of the subfamily, this genus may be known by the following characters, incorporated in this key:

Antennae without terminal club . . . . No New England genera.
Antennae with terminal club . . . . . 1.
1. Club formed of three segments . . . No New England genera.
   Club formed of two segments . . . . . 2.
2. Species inhabiting the old world. . . . . Not treated.
   Species inhabiting the new world. . . . . Hydnocera Newm.

Hydnocera Newman.

Hydnocera. Newman, Entom. Mag., V, 379 (1838); Spinola, Rev. Mag. Zool., 75 (1841); Klug, Clerii, 311 (1842); Spinola, Mon. Clérites, II, 39 (1844); Leconte, Ann. Lyc. Nat. Hist. New York, V, 26, (1852); Lacordaire, Gen. Col. IV, 471 (1857);

Leconte, Class. Col. N. Amer., I, 196 (1862); Gorham, Trans. Ent. Soc. Lond.,260, (1877); Gorham, Biol. Centr. Amer., Col. III, 168 (1883).

Clerus. Say, Journ. Acad. Phila. III, 192 (1823); Germar, Ins. Spec. Nov., 80 (1824).

Trichodes. Say, Boston Journ. I, 164 (1835).

Theano. Castelnau, Ann. Soc. Ent. Fr., (2), I, 33 (1843).

The insects of this genus are found mainly on the foliage of the various species of Cupuliferae, especially on that of the genera Carya and Quercus. Some may be beaten from certain species of Salix and some from the herbage and shrubs along roadsides and watercourses. Although nothing of importance has been published concerning their life-histories, all are probably predaceous or parasitic. The latter inference is supported by the fact that certain species have been reared from the galls of some hymenopterous insect. In distribution the species are known to occur from Manitoba, Canada, throughout the United States, Mexico and Central America and as far south as Buenos Ayres, Argentina. Certain of the species are prone to variation in color but this variation is not coordinate with the geographical range of the species. Other species are constant in color and form in all cases. H. lecontei Wolc. as it is now accepted, varies considerably in size, pubescence and even form, and it is quite possible that more than one species are included under this head. The genus seems to be comparatively young in history, as the structure of the internal genitalia is practically identical in species widely differing in their external appearance. There is one fossil example, H. wolcotti Wickham, described from the well known Mio-

cene deposits at Florrissant, Colorado.

Of the enemies and economic importance of these interesting insects little is known. No internal parasites have been reported as reared from any of the species but there are certainly birds and other animals which do prey upon them. The dissection of the stomach and intestine of a specimen of Hyla versicolor Lec. (Batrachia: Salientia: Hylidae), collected at Wilbraham, Mass. while sweeping the young hickory, showed an elytron of the species pallipennis Say, a form very abundant in that region. So far as is known, the early stages of these beetles are passed in the twigs of hickory or other tree, where the larvae feed on the young woodborers and Scolytids. In this way, the species are of undoubted value to the forester.

The eleven New England species may be readily separated from one another by the following table :

Prothorax distinctly longer than broad; tarsal claws without basal tooth, ... 1.
Prothorax not distinctly longer than wide; tarsal claws with a broad basal tooth, ... 2.

1. Upper parts entirely black; legs rufotestaceous, sometimes infuscate at the knees, ... tabida Lec. (p.)
   Upper parts brownish black; elytra usually with pale markings; legs pale yellowish, never darker, , ... curtipennis Newm. (p.)

2. Prothorax equilateral, or slightly longer than broad, . . . 3.
   Prothorax broader than long, ... 6.

3. Elytra with side margins parallel to apical fourth, ... commixta n. sp. (p.)
   Elytral margins convergent posteriorly, ... 4.

4. Head and thorax with pale markings, . . verticalis Say. (p.)
   Head and thorax aeneous black, ... 5.

5. Elytra with pale markings, ... pallipennis Say. (p.)
   Elytra without definite pale spots, . . subaenea Spin. (p.)

6. Elytra slightly abbreviated, tips serrate, lecontei Wolc. (p.)
   Elytra entirely covering the abdomen, ... 7.

7. Sides of elytra parallel, ... 8.
   Sides of elytra convergent toward apices, ... 9.

8. Elytra with a transverse median bar of white pubescence, . . .
   . . . . . unifasciata Say. (p.)
   Elytra without the transverse bar; humeri sometimes reddish, ... humeralis Say. (p.)

9. Head finely, densely punctate, subfasciata fraterna Wolc. (p.)
   Head coarsely, less densely punctate, . . maritima Wolc. (p.)

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1. Hydnocera tabida Leconte. (Center).

1849. Hydnocera tabida Leconte, Ann. Lyc. Nat. Hist. N. Y., V, 29.

1853. Hydnocera tabida Melsheimer, Catalogue, 83.

1866. " tabida Leconte, List Col. N. A.,

1895. " tabida Wickham, Can. Ent., XXVII, 252.

1910. " tabida Wolcott, In Blatchley's Col. Ind., 857.

Location of type : Museum Comparative Zoology, Harvard University.

~~H. tabida Lec.~~.- Very elongate; brownish black; antennae, mouthparts pale, major parts of legs rufotestaceous. Head black, surface densely alutaceous and sparsely punctured, pubescence fine, depressed and sparse. Eyes large, convex and prominent. Thorax longer than broad, (measured ratio of 36 - 30), nearly cylindrical, lateral dilation weak, apical impression nearly obsolete, surface alutaceous with a few scattered punctures bearing fine hairs. Scutellum black, polished. Elytra long and narrow, coarsely and closely but evenly punctured, entirely black, pubescence long, sparse and erect. Apices separately rounded, obsoletely serrate, dehiscent at suture. Under parts black, alutaceous, sparsely pubescent. Legs rufotestaceous, middle and hind tibiae, and hind femora at apices are usually darker. Length : 4 - 5 mm.

An elongate species, distinguished from the darker forms of curtipennis Newm. by the darker legs and the proportionately longer elytra. The species is widely distributed, reported from Canada, along the Alantic coast and as far west as Kansas and Nebraska. There is but one New England record, Mt. Washington, White Mountains, New Hampshire (Slosson). Usually taken in sweepings from meadow land.

Hydnocera curtipennis Newman.

1840. Hydnocera curtipennis Newman, Ann. Mag. Nat. Hist. IV., n.s., 364.

1842. Hydnocera curtipennis Klug, Clerii, 290.

1844. " longicollis Ziegler, Proc. Acad. Nat. Sci. Phila., II, 44.

1849. Hydnocera curtipennis Leconte, Ann. Lyc. Nat. Hist. N. Y., V, 29.

1849. Hydnocera longicollis Leconte, loc. cit., 30.

1853. " curtipennis Melsheimer, Catalogue, 93.

1853. " longicollis Melsheimer, loc. cit., 93.

1866. " curtipennis = verticalis Leconte, List Col. N. A.

1866. Hydnocera longicollis Leconte, List Col. N. A.

1895. " longicollis Wickham, Can. Ent., XXVII, 252.

1903. " curtipennis = verticalis Schenkling, Gen. Ins., Fasc. 13, 93.

1903. Hydnocera longicollis Schenkling, loc. cit., 93.

1906. " curtipennis = verticalis Schenkling, Deutsch. Ent. Zeit., 303.

1910. Hydnocera longicollis Wolcott, In. Blatchley's Col. Ind. 857.

Location of type : unknown to the author.

~~H. cribripennis Say~~.- Very elongate; aeneous black; antennae, mouth-parts, legs and sometimes part of elytra pale. Head black, shining, sparsely and finely punctate, pubescence sparse. Eyes large, convex, slightly prominent. Thorax distinctly longer than wide, (34 - 30), lateral dilation weak, apical and basal impressions distinct, surface alutaceous with a few scattered hairs, each hair arising in a puncture. Elytra abbreviated, attenuate, humeri distinct, punctures coarse, not confluent, margins serrate toward tips. Color brownish black, usually with a pale maculation extending from the middle of the base, along the median line on each elytron for a greater or less distance. Pubescence uniform, sparse, erect. Under parts aeneous black, pleurae rugose, median pants smooth, minutely and sparsely punctured. Legs pale with long hairs. Length : 3.5 - 5 mm.

A widely distributed species, represented from New England by the following localities : Mass., West Springfield, Springfield, Wilbraham., also from New Hampshire, Hampton, (June 28). Separated from verticalis, which it resembles superficially, by the toothed claws and the very much longer thorax. From tabida, it is separated by the characters given under that species.

Hydnocera pallipennis Say.

1825. Clerus pallipennis Say, Journ. Acad. Nat. Sci. Phila., V, 176.

1837. Hydnocera serrata Newman, Ent. Mag. Lond., V, 480.

1837. Phyllobaenus 4-maculatus Dejean, Catalogue, 3rd. ed., 127.

1837. Phyllobaenus limbatus ♂ Dejean, loc. cit., 127.

1837. " transversalis ♀ Dejean, loc. cit., 127.

1837. " aequinoctialis (var), Dejean, loc, cit., 127.

1840. Hydnocera serrata Newman, Ann. Mag. Nat. Hist.; IV, n.s., 363.

1842. Hydnocera serrata Klug, Clerii, 390.

1842. Clerus pallipennis Klug, loc. cit., 390.

1844. Hydnocera serrata Spinola, Mon. Clér., II, 47.

1844. " limbata Spinola, loc. cit., 49.

1844. " suturalis Spinola, loc. cit., Planches, 39, 6.

1849. " pallipennis Leconte, Ann. Lyc. Nat. Hist. N. Y., V, 28.

1853. Hydnocera pallipennis Melsheimer, Catalogue, 83.

1866. " pallipennis Leconte, List Col. N. A.,

1866. " suturalis Leconte, loc. cit.,

1895. " pallipennis Wickham, Can. Ent., XXVII, 251.

1910. " pallipennis Wolcott, In Blatchley's Col. Ind., 856.

Location of type : lost with the Say collection.

~~H. pallipennis Say.~~ Elongate; aeneous black; elytra pale with margins, suture, apices, median transverse band and humeri dark, antennae, mouthparts and legs testaceous. Head black, bronzed, closely and finely punctured, vertex wrinkled, pubescence sparse. Eyes large convex and prominent. Thorax broader than long, (3? - 35), coarsely and confluently punctured except for disk which is finely alutaceous. Anterior and basal impressions strong, sides dilated strongly just before the middle, lateral fovoae double,

shallow but very evident, pubescence sparse. Scutellum black with silvery pubescence. Elytra slightly shorter than the abdomen, dehiscent at the suture, punctures coarse and a little confused toward tips, which are rounded separately and strongly serrate and somewhat tumid. Color testaceous, margins, humeri, suture, apices and a median transverse band dark brownish black, these markings increasing in size at times to nearly obscure the pale color. Under parts aeneous black, mesopleurae strongly reticulate, metapleurae finely punctured and covered with silvery, silken pubescence. Legs testaceous, apices of femora and tibiae of middle and posterior legs dark. Length : 3.5 - 4.8 mm.

A very abundant species in the eastern part of the United States, but reported from nearly all the states of the Union. The New England records are : New Hampshire, Mt. Washington,. Massachusetts, Tyngsboro, Mt. Tom, Springfield, West Springfield, Westfield, Agawam. Also from Maine (no definite locality cited).

Hydnocera verticalis Say.

1835. Trichodes verticalis Say, Bost. Journ. Nat. Hist., I, 164.

1842. Clerus brachypterus Klug, Clerii, 313.

1842. " verticalis Klug, loc. cit., 389.

1844. Hydnocera lineaticollis Spinola, Mon. Clér., II, 51.

1849. " verticalis Leconte, Ann. Lyc. Nat. Hist. N. Y., V, 29.

1853. Hydnocera verticalis Melsheimer, Catalogue, 83.

1866. " verticalis Leconte, List Col. N. A.,

1906. Hydnocera verticalis Schenkling, Deutsch. Ent. Zeit., 303.

1910. Hydnocera verticalis Wolcott, In Blatchley's Col. Ind., 857.

Location of type : lost in the Say collection.

~~Hydnocera verticalis Say~~.- Elongate; aeneous black, front of head, antennae, mouth-parts, part of legs and usually two vittae on thorax pale. Head shining, sparsely and minutely punctured, vertex dark, sides pale. Pubescence not dense, pale, suberect. Thorax slightly broader than long, (25 - 27), black, disk smooth, sides finely rugose. Apical and basal impressions weak though distinct, lateral dilation weak, pubescence long, sparse, erect. Often with two pale vittae extending from the pale sides of the head nearly to the base. Elytra abbreviated, dehiscent at suture, usually colored as in curtipennis Newm., punctures coarse, evenly distributed, apices serrate, slightly tumid. Under parts black, side pieces more coarsely punctured than median, pubescent. Legs in the darker specimens more or less infuscate on femora and tibiae, in the lighter specimens nearly entirely pale. Length : 3 - 4 mm. ♂, ♀.

This species is sometimes confused in collections with curtipennis Newm., but is distinguished from that species by the tooth on the tarsal claw and by the nearly equilateral thorax. It is widely distributed and has been reported from nearly all sections of the country. From New England, it is known as follows: New Hampshire, White Mts.; Vermont, St. Albans; Massachusetts, Tyngsboro, Springfield, Wilbraham, Chicopee, Mt. Tom.

Hydnocera subaenea Spinola.

1844. Hydnocera subaenea Spinola, Hon. Clér., II, 51.

1844. " steniformis Spinola, loc. cit., Planches, 40, 2.

1853. " subaenea Melsheimer, Catalogue, 8?.

1866. " subaenea Leconte, List Col. N. A.,

Location of type : unknown to the author.

~~Hydnocera subaenea Spin~~.- Elongate, parallel; aeneous; elytra and legs piceous, antennae, mouth-parts, knees, front tibiae and all tarsi paler. Head finely and sparsely punctured, finely rugose on vertex, pubescence sparse. Eyes large and prominent. Thorax broader than long, (28 - 35), sparsely punctured, finely rugose on sides, disk smooth and shining. Lateral dilation weak, foveae present though indistinct, apical impression fine, deep and distinct, basal a rounded groove. Pubescence sparse, erect and dark. Scutellum black, sparsely pubescent. Elytra nearly as long as abdomen, parallel, slightly dehiscent at suture, tips bluntly rounded and coarsely serrate, surface densely punctured, the punctures shallow and indistinct, becoming confused toward apices, tips very slightly tumid. Color piceous, slightly paler across base. Under parts aeneous black, sparsely and very finely punctured, sparsely pubescent. Legs piceous, knees, tarsi and anterior tibiae paler. Length : 3.8 mm. ♂,♀

This appears to be a very rare species, described by Spinola from "L'Amerique septentrionale (Dr. Le Conte)." There are two specimens in the Wolcott collection which fit the original description very closely and are undoubtedly correctly placed. These specimens are from "Mass" and "Tyngs(boro) Mass" respectively. Not recorded from any other locality. (cf. H. lecontei Wolc.).

Hydnocera commixta n. sp.

Location of type : In the collection of Mr. A. B. Wolcott, Chicago, Ill., paratype (with two other specimens) in the Blanchard collection, Harvard University.

~~Hydnocera commixta n. sp.~~ - Moderately elongate; aeneous, elytra black, legs piceous, anterior and middle tibiae, all tarsi, antennae and mouth-parts paler. Head aeneous, finely and densely punctured, pubescence sparse and erect, eyes large and convex. Thorax broader than long, (37 - 42), lateral dilations moderate, foveae shallow but conspicuous, apical impression weak, broadly V-shaped, apex of V directed posteriorly, basal impression distinct; surface coarsely and not sparsely punctured, disk nearly smooth. Scutellum black, sparsely pubescent. Elytra nearly as long as abdomen, slightly convergent behind, tips obliquely truncate, coarsely serrate except on truncation, tumid. Surface coarsely confluently punctured, pubescence sparse, equally distributed, suberect, pale. Color uniform black. Under parts slightly aeneous black, mesosternum coarsely puhctate, metasternum finely rugose, metapleurae finely punctate. Sparsely pubescent. Legs piceous, anterior and middle tibiae and all tarsi paler. Length : 4.5 mm. ♂.

Type labelled "N (ew) Y(ork), Sherman." Other specimens "Mass" and "Drac(ut, Mass) - 7/28-'10." Quite distinct from any other New England species but somewhat of the appearance of a small specimen of H. tristis Schaeffer.

Hydnocera maritima Wolcott.

1910. Hydnocera maritima Wolcott, Ent. News, XXI, 321.

Location of type : in the Wolcott collection, Chicago, Ill.

~~Hydnocera carolina Wolcott~~.- Elongate; olive green; antennae, mouth-parts, tibiae and tarsi paler. Head aeneous, more coarsely and less densely punctured than in subfasciata fraterna Wolc., sparsely pubescent. Eyes moderately prominent. Thorax broader than long, (43 - 50), aeneous, coarsely and densely punctate, apical impression deep, distinct, basal wider but fully as deep, disk with a short longitudinal sulcus just posterior to anterior impression. Lateral dilation strong, foveae deep and distinct. Scutellum with dense white pubescence on median line. Elytra elongate, slightly dehiscent at suture, apices separately rounded and irregular in outline. Pubescence white, sparse but fairly evenly distributed. Color uniform olivaceous. Under parts greenish, black, sparsely and finely punctured, finely rugose at sides. Posterior half of metapleurae with dense whitish pubescence. Legs greenish, tibiae and tarsi paler, the hind tibiae slightly darker. Length : 5 - 5.5 mm. ♂

Very close to some forms of lecontei Wolc. but distinct in the form of the elytra. In some specimens the longitudinal sulcus of the thorax is missing. The type locality is Truro, (Cape Cod), Mass., the type collected on beach grass by Mr. Frederick Blanchard in June, 1892. Specimens have been seen from Long Island. The species is probably restricted the the coastal regions in distribution.

Hydnocera lecontei Wolcott.

1849. Hydnocera subaenea Leconte, Ann. Lyc. Nat. Hist. N. Y., V, 96.

1912. Hydnocera leconteï Wolcott, Bull. Univ. Iowa, VI, 62.

Location of type : in the Leconte collection at Harvard University.

~~Hydnocera leconteï Wolcott~~.- Moderately robust, form of subfasciata Lec.; metallic black to greenish; antennae, mouth-parts and tarsi piceous. Head finely punctured, quite densely, eyes convex and prominent. Thorax broader than long, (41 - 58), apical and basal impressions distinct; lateral foveae deep, distinct; lateral dilations moderately strong. Surface closely and moderately finely punctured, the punctures becoming scarce on the disk. Scutellum black, pubescent. Elytra slightly shorter than body, suture nearly closed, tips separately rounded and sparsely set with fine teeth. Pubescence moderately dense, often forming a rather indistinct post-median cross fascia. Surface densely punctate, the punctures becoming very confused at about apical third. Color uniform greenish black, sparsely or at times decidedly metallic. Underparts greenish black, sparsely punctured and pubescent. Legs greenish, tarsi and occasionally front tibiae piceous. Length : 3.8 - 5 mm. ♂, ♀.

This is the species referred to as subaenea Spin. by Dr. Leconte in his Synopsis. It has a very wide distribution and the extreme forms differ greatly. The New England specimens are fairly typical and are from the following localities : Maine, Wales, Manmouth and Paris; New Hampshire, Mt. Washington; Vermont, Brattleboro; Massachusetts, Tyngsboro, Nantucket Island, Mt. Tom, Wilbraham, Chicopee. Easily separated from subfasciata fraterna Wolc,, its nearest ally, by the dark tibiae.

Hydnocera humeralis Say.

1823. Clerus humeralis Say, Journ. Acad. Nat. Sci. Phila., III, 192.

1824. Clerus humeralis Germar, Ins. Nov., I, 80.

1840. " humeralis Klug, Abh. Berl. Akad., 312.

1840. Hydnocera humeralis Newman, Ent. Mag. Lond., IV, 362.

1844. " humeralis Spinola, Mon. Clér., II, 44.

1849. " humeralis Leconte, Ann. Lyc. Nat. Hist. N. Y., V, 27.

1849. Hydnocera difficilis Leconte, loc. cit., 27.

1849. " cyanescens Leconte, loc. cit., 28.

1853. " humeralis Melsheimer, Catalogue, 83.

1853. " cyanescens Melsheimer, loc. cit., 83.

1866. " humeralis Leconte, List N. A. Col.,

1866. " difficilis Leconte, loc. cit.,

1895. " humeralis Wickham, Can. Ent., XXVII, 251.

1895. " difficilis Wickham, loc. cit., 251.

1906. " difficilis = var. of humeralis Schenkling, Deutsch. Ent. Zeit., 303.

1910. Hydnocera humeralis Wolcott, In Blatchley's Col. Ind., 856.

Location of type : lost in the Say collection.

~~Hydnocera humeralis Say~~.- Oblong, parallel; bluish black, humeri varying from reddish to black; antennae, mouth-parts, and part of legs piceous. Head black, shining, punctures deep and distinct but sparse, vertex transversely rugose; sparsely pubescent. Eyes convex, prominent. Thorax broader than long, (39 - 47), sides broadly dilated, apical impression shallow, on disk becoming several lines, basal shallow, broad and single. Surface

coarsely and irregularly rugose, the grooves more or less connecting the punctures, disk nearly smooth, sides very rough. Lateral foveae double, large and shallow. Scutellum black. Elytra entirely covering the abdomen, coarsely and evenly punctured, pubescence uniform and evenly distributed. Suture closed, tips of elytra together rounded and coarsely serrate. Color varying from blue black with the humeri and sometimes apical third rufous to entirely blue black. Occasionally a specimen is seen that is nearly blue. Under parts black, mesopleurae strongly reticulated, metapleurae and sternum nearly smooth, minutely and sparsely punctured. Pubescence sparse, more dense on pleurae. Legs varying as elytra from rufous with the posterior femora dark to entirely black. Length : 3.5 - 5 mm. ♂, ♀.

There seems no valid reason for the retention of the name dificilis Lec. for the entirely blue black forms, as the intermediate forms can be found in any good series and are quite as abundant in any region as the typical form. The species is widely distributed and is reported from the following localities in New England : Maine, Belfast, Capens; New Hampshire, Durham, Lee; Vermont, St. Albans; Massachusetts, Mt. Tom, Wilbraham, Nantucket Is.; Connecticut, Darien.

Hydnocera subfasciata fraterna Wolcott.

1912. Hydnocera subfasciata var. fraterna Wolcott, Bull. Univ. Iowa, VI, 61.

Location of type (cotypes) : four in the collection of Mr. A. B. Wolcott and two in the collection of Mr. C. A. Frost, Framingham, Mass., the collector of the species.

~~Hydnocera subfasciata fraterna Wolcott~~.- Somewhat robust, greenish; tibiae and tarsi rufous. Head finely and rather densely punctured, sparsely pubescent. Eyes large and convex. Thorax broader than long, (41 - 50), sides moderately dilated, lateral fovoae strong, apical and basal impressions strong, surface closely but not coarsely punctured, punctures confused in front of apical impression. Pubescence long but not dense. Scutellum greenish, pubescent. Elytra as long as abdomen, suture nearly closed, apices obliquely rounded and finely serrate, punctuation coarse and dense, pubescence not dense, sometimes forming an indistinct transverse fascia, as in the typical form. Under parts greenish black, sidepieces of the metasternum densely punctate and pubescent. Legs greenish, tibiae and tarsi rufous. Length : 4.5 mm. ♂,♀.

This subspecies of the western species subfasciata Lec. was described by Mr. Wolcott from specimens collected at Chatham, Mass., July 14, 1907. There are speciemns in the M. A. C. collection from Marion, Mass. that are referable to this subspecies.

Hydnocera unifasciata Say.

1825. Clerus unifasciatus Say, Joun. Acad. Nat. Sci. Phila., V, 176.

1840. Clerus unifasciatus Klug, Abh. Berl. Akad., 390.

1849. Hydnocera unifasciata Leconte, Ann. Lyc. Nat. Hist. N. Y., V, 87.

1844. Hydnocera punctata Spinola, Man. Clér., II, 54.

1853. " unifasciata Melsheimer, Catalogue, 83.

1866. " unifasciata Leconte, List Col. N. A.,

1895. " unifasciata Wickham, Can. Ent., XXVII, 251.

1910. " unifasciata Wolcott, In Blatchley's Col. Ind, 956, fig.

Location of type : lost in the Say collection.

~~Hydnocera unifasciata Say~~.- Elongate, parallel. Black, slightly bluish, shining. Elytra with a median transverse band of white pubescence. Antennae and labial palpi testaceous. Head bluish black, finely rugulose with a nearly obsolete median impression, eyes large, convex and prominent. Thorax broader than long, (29 - 37), sparsely pubescent with long, pale hairs, apical and basal impressions strong, the basal more so. Sides dilated strongly before the middle with distinct lateral foveae, sides rugulose, disk nearly smooth. Elytra completely covering the abdomen, parallel, suture closed, at base equal in width to the head, humeri prominent and smooth, each elytran rounded on the outer angle and serrate behind the middle. Surface coarsely and densely punctured, pubescence except for the median band, sparse, long and erect. Median band narrow, reaching nearly across each elytran, of fine, dense, silvery pubescence. Under parts black, sides of thorax rugose, without pubescence. Legs piceous, hairy. Length : 3.5 mm. ♂, ♀.

A species not to be confused with any other occurring in this region. Only reported from Massachusetts (Framingham, Tyngsboro, Wilbraham, Westfield and Agawam), but undoubtedly occurring in the neighboring states.

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Explanation of Plate.

(Drawings so designated are from the type specimen.)

Fig. 1. H. pallipennis Say. Terminal ventral abdominal segment, ♂.

" 2. H. pallipennis Say. " " " " ♀.

Fig. 3. H. pallipennis Say. Tarsus of posterior leg. x

" 4. H. purtipennis Newm. Tarsal claw of posterior leg. x

" 5. H. pallipennis Say. Tarsal claw of posterior leg. x

" 6.& 17. Elytra of various species showing color distribution and marginal serration.

" 6. H. maritima Wolc. (TYPE).

" 7. H. unifasciata Say.

" 8. H. subaenea Spin.

" 9. H. tabida Lec.

" 10. H. lecontei Wolc.

" 11. H. subfasciata fraterna Wolc. (COTYPE).

". 12. H. commixta n. sp. (TYPE).

" 13. H. pallipennis Say.

" 14. H. pallipennis Say. (Color variety).

" 15. H. curtipennis Newm.

" 16. H. verticalis Say.

" 17. H. humeralis Say. (Typical form).

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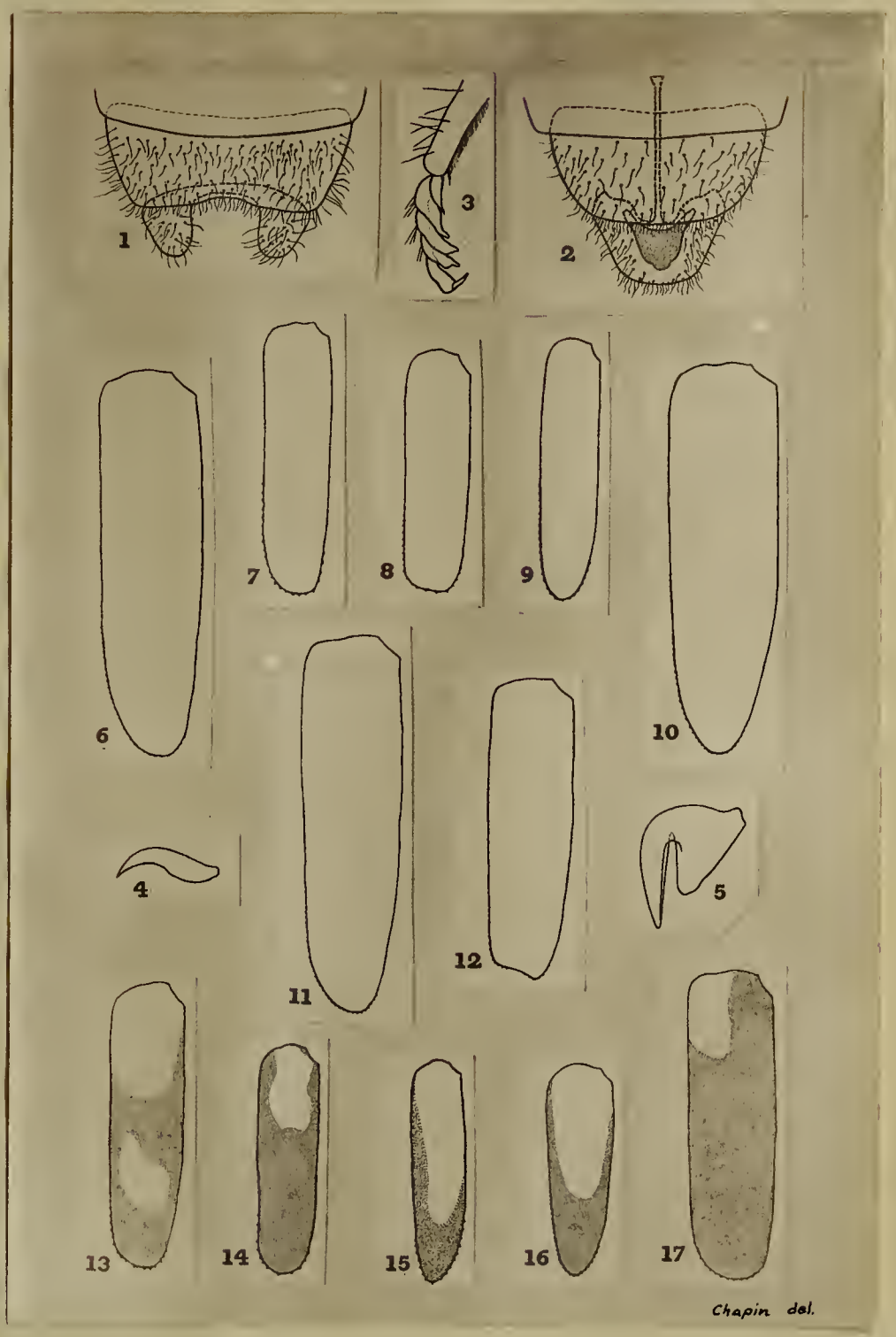
PLATE I.



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